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AUTHOR Taylor, Maurice C.
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ABSTRACT

A study was conducted to identify the literacy requirements of 10 college vocational training programs and their corresponding occupations. Following a review of 5 years of student records at an eastern Ontario community college, the 10 major vocational programs studied were categorized as follows: motor vehicle mechanic, engineering technician, baker, computer operator, cabinet maker, welder, cook, business equipment service technician, electronics assembler, and refrigeration and air conditioning technician. Reading and writing requirements needed for these programs were identified and compared to those on the job sites for each of the corresponding occupations. Instructors, coordinators, and students were interviewed for each of the vocational preparation programs. Three job sites corresponding to the occupational training program were identified and employees and supervisors were interviewed. Samples of materials used in the training programs and on the job were analyzed and subjected to four readability formulas. The study found that reading was a requirement of both trainees in the vocational programs and of employees on the job sites; however, employees spent much less time reading than trainees. Readability scores for all training program materials and occupational site materials ranged from grade 9 to grade 12 levels. Writing skills needed were higher for trainees than for workers. Suggestions were made to improve training by focusing on job-related materials and vocabulary. (KC)

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WORKPLACE LITERACY DEMANDS

MAURICE C. TAYLOR
ALGONQUIN COLLEGE
ADULT BASIC EDUCATION

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ABSTRACT: The purpose of this study was to identify the literacy requirements of 10 college vocational training programs and their corresponding occupations. Readability estimates of vocational preparation curriculum and job site materials are presented. Results may help to improve instruction and assist basic education students in making more accurate career choices based on their skills.

RESUME: Cette étude avait pour but d'identifier les pré-requis d'alphabétisation dans les 10 programmes d'entraînements d'un collège et de leurs occupations correspondantes. Un calcul d'estimation du degré de difficulté des textes dans les curriculum et du matériel de travail sont présentés. Les résultats peuvent aider à améliorer l'instruction et à assister les étudiants d'education de base en faisant des choix de carrière plus judicieux basés sur leur habiletés.

Introduction

Training and retraining of people for success in occupational roles is a complex and difficult one which engenders considerable debate on the topic of functional job literacy. Occupational literacy development is a major component of prevocational, vocational and on-the-job training. Rush, Moe and Storlie (1986) define occupational literacy as the ability to competently read required work related materials. The definition derived from Kirsch and Guthrie (1977-78) proposed that functional literacy be defined according to the demands of specific situations in terms of competency in reading alone, but more recent research has included listening, speaking and writing as literacy related competencies. Spikes and Cornell (1987, p. 181) explain that "beyond reading competence and with reference to the wide variety of occupations, occupational literacy is a term that should be perceived as "fluid" in terms of individual competencies related to situations."

Kenter (1986) claims that as the work place becomes complicated, requiring higher specialized skills and training, the definition of illiteracy will have to be broadened to include those who can't meet the new workplace requirements. Current estimates

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of occupational demands for literacy indicate that over 90% of occupations call for some reading and writing. (Mikulecky, 1982). Further 70% of occupations require reading at a grade 9 - 12 level. Only 15% of occupations require reading levels below the grade 9 level. (Mikulecky, 1984). Researchers have found the average work place requires not only the ability to read, write and compute but also the ability to use those skills in problem solving situations. The average worker must read and skim a wide variety of materials to solve problems and make decisions. This is in contrast to the school environment where the student is reading primarily to gain literal facts.

In a recent study, Hull and Sechler (1987) reviewed the adult literacy skills needed in the workplace and classified those needs according to type of skill. Generally, the results indicated that higher level skills are needed in today's work force than 5 years ago. The authors suggest that as more companies convert to more complex equipment, employee skills must be upgraded. Basic literacy skills serve as pre-requisites to the learning of more technical knowledge. This knowledge is specific to types of equipment and industries but the underlying literacy skills tend to be somewhat generic. Company managers, instructors and trainers identified some of the following skills necessary for successful job entry: reads, writes and counts (math-related), reads for facts and information, writes legibly, completes forms and applications adequately, signs forms appropriately, writes dates and times correctly h) uses listening skills to identify procedures to follow and speaks face to face coherently.

Method

In order to select the 10 skill training preparation programs, 150 student records were examined from three basic employment orientation programs offered in an eastern Ontario community college. Records were reviewed between the period of 1982 - 1987. Student information regarding further skill training programs referred to or the type of employment found by graduating trainees was collected. This information was then categorized into the following ten major vocational preparation programs: Motor Vehicle Mechanic, Engineering Technician, Baker, Computer Operator, Cabinet Maker, Welder, Cook, Business Equipment Service Technician, Electronics Assembler and Refrigeration and Air Conditioning Technician. Reading and writing requirements needed for these programs were identified and compared to those on the job sites for each of the corresponding occupations. Instructors, co-ordinators and students were interviewed for each of the vocational preparation programs. Three job sites corresponding to the occupational training program were identified and employee's and supervisors were interviewed. A similar study conducted by Rush,

Moe and Storlie (1986) investigated vocational preparation programs and occupations of a professional and para professional nature whereas in this investigation the more basic training programs and semi-skilled occupations were examined.

An occupational literacy survey was constructed and used in interviews with instructors, job site supervisors and employees when referring to reading and writing competencies. Both instructors and students in each training program selected samples of course materials used on a regular basis or of primary importance. Generally text books, manuals, operation and procedure guides and safety practices were selected. On the job sites day - to - day examples of reading and writing tasks were collected from employees and supervisors. Technical references, working practices, policies and instructions, handbooks, memoranda, correspondence and training manuals were used in the analysis.

Four readability formulas were used to determine the readability of each curriculum sample and related job materials. These included the Dale-Chall Formula, the Raygor Formula, the Fog Index and the Fry Readability Graph. In using the different readability formulas certain job materials were not analyzed because they were less than 30 words or were illustrations, graphics, diagrams or tabled information. Estimates of formula-based predictors of readability should be interpreted with caution. These methods do not account for the influence of reader-related factors such as knowledge, task/text familiarity, interest and motivation.

Results

Reading Requirements. Reading was a daily requirement of both trainees in the vocational preparation courses and of employees involved in this investigation. Although there were variations in time spent on reading and on types of materials read, this skill was required in each of the settings. Students in all preparation programs except for Baker and Business Equipment Services Technician spent much more time per day reading compared to workers in the corresponding occupation. Greater training program use of reading skills is due to the need for presentation of large quantities of information in a limited period of time. Based on estimates from students, instructors, employees and employers, it would appear that trainees spend 2/3 more time per day reading than workers, In some occupations workers reported that they sometimes reread the same material several times per workday.

Readability scores for all training program materials and occupational site materials ranged from a grade 9 to a grade 12 level. For some vocational preparation programs, readability

estimates indicated that trainees with the appropriate admission requirements may encounter difficulty in reading the core curriculum. This was the case for the Motor Vehicle Mechanic, Cabinet Maker, Business Equipment Services Technician and the Electronics Assembler programs. Readability estimates from the workplace samples closely paralleled the estimates from the training program. The range of scores from both settings were the same for Baker, Welding Fitter, Cook and Air Conditioning and Refrigeration Technician. For the other occupations, scores from on-the-job materials were lower than in the training program. Based on this analysis, trainees who were able to read the vocational training materials would be able to read on-the-job reading tasks. It should be mentioned here that reading materials encountered by students and workers participating in the study varied in length, type, level of usage and format. The use of expository and descriptive prose was more frequently observed in the reading tasks required of the training program than of the workplace setting.

Writing Requirements. The writing requirements for the two settings were very different. In the training program writing skills were used for note taking, and writing tests, quizzes, project assignments and examinations. On-the-job writing competencies required only rudimentary skills. It is interesting to note that trainee perceptions of essential writing skills required in the sought after occupation were only minimally observed on the workplace setting. Being able to write pertinent information in work format was perceived by the majority of trainees as an essential skill. In the training program the style of writing was usually formal and technical whereas on-the-job handwritten prose was informal, abbreviated, ungrammatical and often only contained essential information.

In summary, all training and occupation settings investigated in this study required reading at a grade 9 - 12 level and some form of writing skills using a technical vocabulary. As well employees spent much less time reading than trainees. On the average employees spent 65 minutes a day reading which is slightly less than Mikulecky's findings of 97 minutes per day for blue collar workers.

Instructional Recommendations and Strategies

Skills and knowledge are best learned if they are presented in a context that is meaningful to the person. The more similar the basic skills training tasks are to the actual job tasks, the greater will be the likelihood that the training will pay off in improved job performance. Based on the results of this investigation, reading was used both as a tool for accomplishing

work and as a tool for learning information on the job and in the training. One approach to better preparing such trainees in basic education programs is to design lessons which develop literacy skills and impart job-related knowledge. The following are a few suggestions that may help instructors prepare students for success in work roles:

1. Developing vocabulary skills using context clues which focus on specific work topics

2. Using specialized vocabulary from training and occupational settings to enhance vocabulary development

3. Improving structural analysis skills by using words drawn from various technical fields

4. Emphazing comprehension skills through the use of "Job Sheets" which describe specific job tasks and asks the learner to answer procedural questions and

5. Promoting risk taking at the expense of correctness in writing

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